

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica St. Louis  
13715 Rider Trail North  
Earth City, MO 63045  
Tel: (314)298-8566

TestAmerica Job ID: 160-6492-1

Client Project/Site: Beta Chem site, Lenexa, KS

For:

Tetra Tech EM Inc.  
415 Oak Street  
Kansas City, Missouri 64106

Attn: Danny O'Connor



Authorized for release by:  
5/8/2014 11:47:54 AM

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### LINKS

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*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*



# Table of Contents

Cover Page . . . . .	1
Table of Contents . . . . .	2
Chain of Custody . . . . .	3
Receipt Checklists . . . . .	4
Definitions/Glossary . . . . .	5
Method Summary . . . . .	6
Sample Summary . . . . .	7
Detection Summary . . . . .	8
Client Sample Results . . . . .	9
QC Sample Results . . . . .	11
QC Association Summary . . . . .	12

Preliminary Data



- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11



Date: 5/5/14  
Page: 1 of 1  
Project No: X9025140060  
Shipment Method: Feed Ex  
Number of Coolers Shipped: 1



160-6492 Chain of Custody

Relinquished By:  (Signature)	Received By:  (Signature)	Date: 5-6-14	Time: 0700
Relinquished By: (Signature)	Received By: (Signature)	Date:	Time:
Relinquished By: (Signature)	Received By: (Signature)	Date:	Time:

## Login Sample Receipt Checklist

Client: Tetra Tech EM Inc.

Job Number: 160-6492-1

Login Number: 6492

List Source: TestAmerica St. Louis

List Number: 1

Creator: Clarke, Jill C

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

## Definitions/Glossary

Client: Tetra Tech EM Inc.  
Project/Site: Beta Chem site, Lenexa, KS

TestAmerica Job ID: 160-6492-1

### Qualifiers

#### Rad

Qualifier	Qualifier Description
G	The Sample MDC is greater than the requested RL.
U	Result is less than the sample detection limit.

### Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

## Method Summary

Client: Tetra Tech EM Inc.  
Project/Site: Beta Chem site, Lenexa, KS

TestAmerica Job ID: 160-6492-1

Method	Method Description	Protocol	Laboratory
C-01-1	Carbon-14 (EERF C-01-1)	EERF	TAL SL

**Protocol References:**

EERF = EERF

**Laboratory References:**

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Preliminary Data

## Sample Summary

Client: Tetra Tech EM Inc.  
Project/Site: Beta Chem site, Lenexa, KS

TestAmerica Job ID: 160-6492-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-6492-1	G2 PVC INTAKE	Filter	05/05/14 12:30	05/06/14 07:00
160-6492-2	G1 HOOD FRAME	Filter	05/05/14 12:35	05/06/14 07:00
160-6492-3	G1 HYDROGEN CYLINDER	Filter	05/05/14 12:40	05/06/14 07:00
160-6492-4	G1 ARGON CYLINDER	Filter	05/05/14 12:45	05/06/14 07:00
160-6492-5	CONTAINER 20	Filter	05/05/14 12:50	05/06/14 07:00
160-6492-6	CONTAINER 7R	Filter	05/05/14 12:55	05/06/14 07:00
160-6492-7	CONTAINER 19	Filter	05/05/14 13:00	05/06/14 07:00
160-6492-8	CONTAINER 16	Filter	05/05/14 13:05	05/06/14 07:00

Preliminary Data

## Detection Summary

Client: Tetra Tech EM Inc.  
Project/Site: Beta Chem site, Lenexa, KS

TestAmerica Job ID: 160-6492-1

**Client Sample ID: G2 PVC INTAKE**

**Lab Sample ID: 160-6492-1**

No Detections.

**Client Sample ID: G1 HOOD FRAME**

**Lab Sample ID: 160-6492-2**

No Detections.

**Client Sample ID: G1 HYDROGEN CYLINDER**

**Lab Sample ID: 160-6492-3**

No Detections.

**Client Sample ID: G1 ARGON CYLINDER**

**Lab Sample ID: 160-6492-4**

No Detections.

**Client Sample ID: CONTAINER 20**

**Lab Sample ID: 160-6492-5**

No Detections.

**Client Sample ID: CONTAINER 7R**

**Lab Sample ID: 160-6492-6**

No Detections.

**Client Sample ID: CONTAINER 19**

**Lab Sample ID: 160-6492-7**

No Detections.

**Client Sample ID: CONTAINER 16**

**Lab Sample ID: 160-6492-8**

No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica St. Louis



# Client Sample Results

Client: Tetra Tech EM Inc.  
Project/Site: Beta Chem site, Lenexa, KS

TestAmerica Job ID: 160-6492-1

## Client Sample ID: G2 PVC INTAKE

Date Collected: 05/05/14 12:30

Date Received: 05/06/14 07:00

Lab Sample ID: 160-6492-1

Matrix: Filter

### Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	9900	G	148	1080	5.00	7.16	pCi/Sample	05/06/14 14:11	05/07/14 16:01	1

## Client Sample ID: G1 HOOD FRAME

Date Collected: 05/05/14 12:35

Date Received: 05/06/14 07:00

Lab Sample ID: 160-6492-2

Matrix: Filter

### Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	3400		50.9	370	5.00	3.92	pCi/Sample	05/06/14 14:11	05/07/14 16:04	1

## Client Sample ID: G1 HYDROGEN CYLINDER

Date Collected: 05/05/14 12:40

Date Received: 05/06/14 07:00

Lab Sample ID: 160-6492-3

Matrix: Filter

### Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	846		12.8	92.2	5.00	1.95	pCi/Sample	05/06/14 14:11	05/07/14 16:10	1

## Client Sample ID: G1 ARGON CYLINDER

Date Collected: 05/05/14 12:45

Date Received: 05/06/14 07:00

Lab Sample ID: 160-6492-4

Matrix: Filter

### Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	301		4.63	32.9	5.00	1.27	pCi/Sample	05/06/14 14:11	05/07/14 16:26	1

## Client Sample ID: CONTAINER 20

Date Collected: 05/05/14 12:50

Date Received: 05/06/14 07:00

Lab Sample ID: 160-6492-5

Matrix: Filter

### Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	265		4.09	29.0	5.00	1.26	pCi/Sample	05/06/14 14:11	05/07/14 17:06	1

TestAmerica St. Louis

# Client Sample Results

Client: Tetra Tech EM Inc.  
Project/Site: Beta Chem site, Lenexa, KS

TestAmerica Job ID: 160-6492-1

**Client Sample ID: CONTAINER 7R**

Date Collected: 05/05/14 12:55

Date Received: 05/06/14 07:00

**Lab Sample ID: 160-6492-6**

Matrix: Filter

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	209		3.26	22.8	5.00	1.13	pCi/Sample	05/06/14 14:11	05/07/14 17:53	1

**Client Sample ID: CONTAINER 19**

Date Collected: 05/05/14 13:00

Date Received: 05/06/14 07:00

**Lab Sample ID: 160-6492-7**

Matrix: Filter

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	35.3		1.35	4.05	5.00	1.07	pCi/Sample	05/06/14 14:11	05/07/14 18:50	1

**Client Sample ID: CONTAINER 16**

Date Collected: 05/05/14 13:05

Date Received: 05/06/14 07:00

**Lab Sample ID: 160-6492-8**

Matrix: Filter

Method: C-01-1 - Carbon-14 (EERF C-01-1)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	18.6		1.07	2.28	5.00	1.06	pCi/Sample	05/06/14 14:35	05/07/14 19:58	1

# QC Sample Results

Client: Tetra Tech EM Inc.  
Project/Site: Beta Chem site, Lenexa, KS

TestAmerica Job ID: 160-6492-1

## Method: C-01-1 - Carbon-14 (EERF C-01-1)

Lab Sample ID: MB 160-120490/1-A  
Matrix: Filter  
Analysis Batch: 120894

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 120490

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Carbon-14	-2.225	U	0.585	0.632	5.00	1.08	pCi/Sample	05/06/14 14:11	05/07/14 13:45	1

Lab Sample ID: LCS 160-120490/2-A  
Matrix: Filter  
Analysis Batch: 120894

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 120490

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Carbon-14	21.1	19.32		2.35	5.00	1.04	pCi/Samp	92	67 - 124

Preliminary Data

## QC Association Summary

Client: Tetra Tech EM Inc.  
Project/Site: Beta Chem site, Lenexa, KS

TestAmerica Job ID: 160-6492-1

### Rad

#### Prep Batch: 120490

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-6492-1	G2 PVC INTAKE	Total/NA	Filter	LSC_Dist_Susp	
160-6492-2	G1 HOOD FRAME	Total/NA	Filter	LSC_Dist_Susp	
160-6492-3	G1 HYDROGEN CYLINDER	Total/NA	Filter	LSC_Dist_Susp	
160-6492-4	G1 ARGON CYLINDER	Total/NA	Filter	LSC_Dist_Susp	
160-6492-5	CONTAINER 20	Total/NA	Filter	LSC_Dist_Susp	
160-6492-6	CONTAINER 7R	Total/NA	Filter	LSC_Dist_Susp	
160-6492-7	CONTAINER 19	Total/NA	Filter	LSC_Dist_Susp	
160-6492-8	CONTAINER 16	Total/NA	Filter	LSC_Dist_Susp	
LCS 160-120490/2-A	Lab Control Sample	Total/NA	Filter	LSC_Dist_Susp	
MB 160-120490/1-A	Method Blank	Total/NA	Filter	LSC_Dist_Susp	